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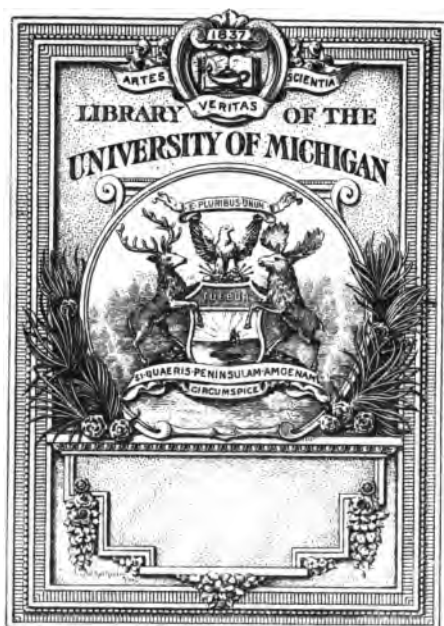
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Compliments of
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L. A. Falligant

A MONOGRAPH

Amesbury, Mass.

ON THE

80355

From Dr. Woodford
Dec 9

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YELLOW FEVER OF 1876

IN

SAVANNAH, GEORGIA.

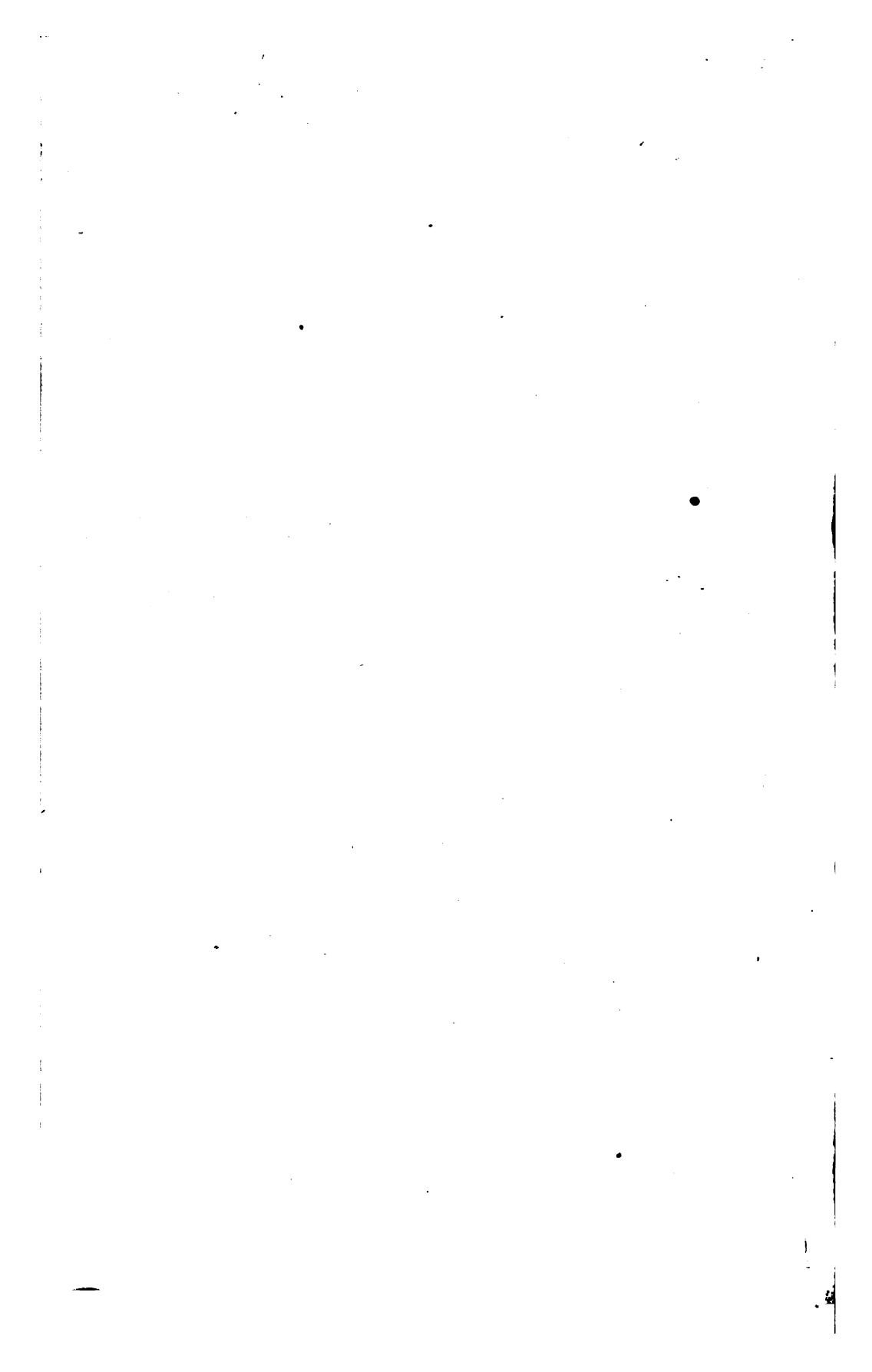
BY

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AUTHOR'S PREFACE.

The many kind commendations given me by my professional brethren of all schools of medicine for my paper on the Epidemic of Yellow Fever in Savannah, Georgia, in 1876, and the numerous requests made for copies of it since, which I have been unable to grant by reason of its never having been published for sale, and but a few copies printed for private distribution; and the pressing need at this time

Compliments of the AUTHOR.

THOUSAND CASES.

both as to the origin and symptoms of the disease and its treatment, by Dr. Belot and myself, so surprised Col. Scriven, who was well aware that neither Dr. B. nor I knew of the other's writings, that he sent me a copy of the translation, with a very kind personal expression of his discovery; and to that translation I am indebted for many valuable suggestions.

I have felt more encouraged to republish my own paper also by the results of investigations made by me in January, 1879, at Bay St. Louis, Pass Christian, Mississippi City, Biloxi, Ocean Springs and Pascagoula, immediately after the great epidemic of 1878, which swept like a tornado over the beautiful resorts of the Mississippi coast. It is a singular fact that in these towns (with the exception of Ocean Springs)

the physicians treated their patients in a manner very similar to the means used by Dr. Belot in Havana and by myself in Savannah, and with a very fair success, whilst the treatment was wonderfully different from that employed by old-school physicians elsewhere (and which was less successful). Whilst the ratio of deaths to cases ranged from 8 to 10 per cent. at five of the places mentioned, at Ocean Springs, an equally charming place, the death ratio was about 35 per cent.—a startling difference readily understood when I found that a professional *experimenter* had given his patients *ice-baths* (a method of successfully killing them which had been tried by some of my medical friends and hurriedly abandoned in Savannah in 1876).

The desire of every true physician is to cure his cases, “tute, cite, jucunde,” and he is not a true physician who refuses to employ such means as have been tried in the fire of pestilence and not found wanting.

For myself I can say that it was a joy to me to discover Dr. Belot's experience, because it strengthened and encouraged me in the belief that I must have trodden a good path-way toward rescuing the sick from danger and death, and nerved me to more determined subsequent investigations; and the experience of these gentlemen on the Gulf coast brushed away any lingering hesitancy I might have felt as to my duty to communicate to the medical profession at large the results of my observations.

With these views I herewith submit to you all the accompanying reprint and *addenda*, well assured that it will receive from my brother physicians of all schools such greeting as each heroic veteran loves to extend to all practitioners who are and have been battling like himself against the grim Spectre of the Pestilence.

LOUIS A. FALLIGANT.

SAVANNAH, GA., September, 1888.

[REVISED EDITION, 1888.]

REPORT

ON THE

Epidemic of Yellow Fever

(*"La Maladie du Diable"*)

IN SAVANNAH, GEORGIA,

DURING THE MONTHS OF

September, October and November, 1876.

BY DR. LOUIS A. FALLIGANT.

Like the unharmed veterans of a desperate conflict, the survivors of a plague, such as that which visited our fair city, should first give thanks to Almighty God for their preservation through such a prolonged and fatal scourge, and then furnish the world the benefit of their experience, wherefrom to glean lessons of prudence by which to ameliorate future dangers and future sufferings. In this spirit I avail myself of the opportunity to place before my brethren of the medical schools such facts as I have accumulated from superabundant observations, and to arrange them with such analytic skill and amend them with such practical suggestions as have occurred to myself during their exhibition.

The summer of 1876 found the city of Savannah in a condition widely different from that of many previous years, both in a hygienic and thermometrical sense. Some years since, a system of underground sewerage was projected and constructed through the most central and densely populated sections of the city, having its outlets at the surface on the

eastern and western declivities of the hill on which the city is built. The original purpose of this sewerage was to drain off the water from the streets and bath-rooms attached to private residences. The soil of the city is of a porous, sandy nature, readily absorbing fluids; and these sewers, intended, as I before stated, for *surface drainage* especially, were constructed at a depth *above* the natural percolative water-level of the adjacent and subjacent soil, so that much of the fluids passing along them percolated through the uncemented bottom circles of the sewers and infiltrated the subjacent ground. So long as the sewers were confined to their original purpose, that is, the drainage of water only, no anxiety was felt as to their influence on the health of the city; but gradually they were perverted from this excellent use, and the occupants of adjacent premises were permitted to make pipe connections, through which to empty the filthy contents of dishtroughs, slopbuckets, house-prives or water-closets, and other deleterious fluids and excretions, until they became hot-beds of noxious and putrid gaseous emanations. It will be easily seen that if the fluids could percolate through the sewer walls into the adjacent soil, necessarily the solids would be left in quantities along the inner beds of the sewers. From the very first I denounced this conversion of these conductors of water into conductors of filthy and human excretory matters as a most unwise step, which would certainly end in the prolific generation of typhoid and malignant disease; but the protest was unheeded and the evil continued to increase, until it was a common thing for persons residing and passing near the sewer mouths to complain of the offensive smell arising therefrom.

Another source of malignant poison exists in the numerous dry-wells scattered through the city, and connected with house-prives or water-closets also by a similar pipe-system, through which the exhaled odors of the dry-wells regurgitate back into the sleeping rooms of the tenants (with which they are more especially connected for convenience), and render pure nightly respiration a practical impossibility.

And still another condition in the same class of disorders was that many of the yard-prives (which are constructed by

digging a hole five to eight feet deep into the soil, and bricking the sides up to or above the surface level) were filled to overflowing by the heavy June rains, and from their flooded contents emitted into the surrounding atmosphere the greatest amount of offensive odors, until the entire neighborhood became almost unendurable because of the stench. I have in my mind's eye just now one on State street, near Whitaker, against which numerous complaints were unsuccessfully made for a long time, and within fifty yards of which not less than *fifteen* persons died of the most malignant congestive type of yellow fever, with coffee-grounds black-vomit and complete suppression of urine.

On the northern, eastern, south-eastern and western borders the city is surrounded by a cordon of low, wet lands, originally in rice-culture, which is still carried on across our eastern border, scarcely a mile from the section where yellow fever first made its appearance in 1854 and 1876, and between which and the built-up eastern border of the city there is scarcely a shrub to serve as a shield against the ingress of its deadly exhalations. These lowlands, almost entirely encompassing us, must either be kept in good hygienic condition by proper drainage, or remain cesspools of stagnant and filthy fluids, percolating from our spring-edged marginal hillsides, and pouring from our slopes and sewers into their clogged ditches and upon their boggy surfaces, until the combination of street-washings, sewer-fluids and stagnant swash presents a surface of animal and vegetable decomposition, capable of generating just such a stench as every passer-by noticed and complained of during the unhappy season of 1876.

And across the eastern border, in addition to the low grounds, rice fields, and undrained and foul ditches which I have already described, we have that great hot-bed of filthy and partially decomposed excrementitious gatherings, the Bilbo Canal, the open-surfaced outlet of the sewer-system of the city—a canal most happily arranged for the surface expansion of its contents, so as to spread them out as broadly as possible to solar heat and gaseous evaporation, whereby the greatest amount of odor may be exhaled into the sur-

rounding atmosphere. Imagine to yourself a drain of this character a mile in length and twenty feet in breadth, with its filthy contents spread over its flattened bottom, and you have before you Savannah's ideal of a privy sewer drain under an August sun. Not far from this line of ammoniacoputrid exhalations I observed the first cases of *watery red eyes*, with high and in some cases erythematous types of fever, which led me to suspect the inception of the epidemic; and may we not stop for a moment, and ask ourselves the question whether these pestilential exhalations may not, in this early symptomatology, have given us a clue to the intense affinity which the scourge manifested for the urinary apparatus and mucous membranes, with their associated blood-poisonings and nervous prostration? The very fact that it was most prevalent and most deadly where human effluvia were most offensive, is abundant reason for serious consideration. Is it possible for solar intensity to ferment such debris into new and more pernicious death-dealing gases?

Beyond this canal, on the east, lie the tier of wet-culture rice-fields, the property of gentlemen whose social position enables them to plant rice by this system within a mile of, and opening unto the eastern breast of the city, when in all other directions it has been forbidden and prevented for fully two miles away, even though long ranges of woods shelter the adjacent borders of the city from their obnoxious exhalations. It is unnecessary for me to dwell on the hygienic nature of these fields during the late summer and early autumn harvest flows--their deadly influence being too well known by practical experience to render hypothetical reasoning or toleration at all admissible. Yet, whilst other medical gentlemen have patiently labored upon the varied miasmatic and cryptogamic theories to which science or speculation have given origin, I feel more inclined to believe that the exhalations of the wet-cultured rice-field in the period of the harvest-flow become more deadly, not so much from vegetable as from organic or insectivorous decomposition, superinduced in these stagnant waters by the hot summer suns. It is perfectly well known that no such effluvia arise from *running* streams, and consequently *stagnation* is a

condition essential to their production. Take a barrel of pure distilled or rain water, stand it on end, knock out the upper head, and let it remain a few days or longer in your yard, exposed to the summer's atmosphere; soon you have a most disagreeable stench arising therefrom, undoubtedly caused by the decomposition of animalculæ, which are generated, live, die and decompose therein by the myriad. If running water were constantly passed through the barrel, or if the water therein were replaced daily by fresh water, no such offensive condition could arise; but by the prolonged retention of the same water, infused with the products of organic decay, the offensiveness increases until it reaches the zenith of its putrid capacity.

These rice-fields, during the harvest flow (or stagnation), and the shallow puddles that coated the flat surfaces and lined the unclean ditches and canals in all directions around the city in 1876, present a superficial area of 'stagnation equivalent to millions of such barrels! What wonder, then, that our atmosphere became infiltrated with poisonous emanata! And when we add to this the special pestilential element infused from the ammoniaco-putrid odors of the open-surfaced Bilbo sewer outlet (which I am officially informed had not been flooded with fresh water from the river for eight or ten months prior to the breaking out of the epidemic), the foul gases everywhere exuding from unflushed sewers, privies and dry-wells, and the filthy street-washings, which the heavy rains of June and a portion of July had spread out over the bogs and uncleaned ditches near the eastern and western slopes, is it a marvel that the pestilence traversed back from the east and the west along the directions whence its deadly poisons flowed, until it gathered density and ever-renewing vitality from the aggregation of its elementary sources?

In addition to these local causes of disease, which had by neglect been permitted to organize their elementary forces for a deadly assault on our lives, nature, offended by our carelessness, supplied all additional conditions for our punishment. During the month of June and latter part of July the rains came in torrents, the fall of water being 18.80 in the

former month, and 5.67 inches on the 24th, 25th and 30th of July. Recalling my statement that the sewers and connecting drain and surface lines were only washed out during *heavy rainfalls*, it will readily be seen how the sewer-filth and street garbage were at these times carried off in quantities, and poured out beyond the eastern and western slopes, and along the flat-bottomed and neglected outer canals, where it lay for fermentation under the burning rays of the August suns. Out of a total rainfall of 6.88 inches during the month of August, we again find a surge of 3.40 inches in one day, the 21st; and during the entire month of September, which was hot, dry and feverish, and during which the epidemic swept like a tornado from one extreme of the city to the other, the total rainfall was only 2.63 inches. I am of the opinion that frequent heavy washing rains, which would have secured our streets and sewers, would have greatly modified the malignity of the pestilence, *provided* the outer drains, ditches, surfaces and canals had been properly cleaned and freshened by the afflux and influx of purer water, and their contents carried off in freely-opened and running streams of exit to the river. But such was not the case in 1876, and no systematic artificial flushing of the sewers was attempted until the scourge was under full headway about the last of August, nor any continued effort made at any time to improve the sanitary condition of our filthy lowgrounds. Unhappily, the dry weather of September lent no assistance to scattering individual efforts in this latter direction, and our stagnant, filthy, marginal swash-expanses steamed and fermented, and exhaled their noxious gases, until the cooler weather of October and November gradually tempered their putridity.

In this connection I call particular attention to a most remarkable exhibition of the truth of my assertion in regard to freshening stagnant waters. When the epidemic of 1854 was at its height, about Sept. 12th a great storm came, the rains deluged and washed our streets, the river rose over its banks and flooded the lowgrounds and rice-fields with purer waters, and in a few days the pestilence rapidly subsided, until there were but two or three deaths daily from its

influence. At that time there was no Bilbo Canal and connecting sewerage system, but there was animal and vegetable putrescence and expanded stagnant surfaces, perhaps even more extensive than in 1876. May not the added poisons of our pestilential sewerage system and Bilbo Canal have supplied those additional morbid agencies, which gave to the scourge of 1876 so much of the nature and complication of an infectious typhoid?

Now as to the temperature. From the 21st of June to the 24th of July the daily average *mean temperature* was never below 80 degrees for a single day, and for twenty-five days of that period it ranged from 85 to 90 degrees; and in August we find twenty-seven days with an average mean temperature above 80 degrees, of which eleven were 84 degrees or above; and up to the 27th day of September there were but two days in which the mean temperature fell below 77 degrees. I may truly say that for continuous intensity of heat, and extensity of surrounding stagnation and putrescent decomposition, I have never known since 1854 a season like that of 1876.

THE INCEPTION OF THE EPIDEMIC.

During the earlier part of August my attention was called by friends to the offensive odors permeating the atmosphere in the region of the Bilbo Canal, on the eastern border of the city; and not many days thereafter I detected in cases of fever in this region the red suffused eyes, flushed cheeks, frontal headache, dorsal and lumbar pains, pains in the extremities, abdominal lethargy and high bounding pulse, that reminded me forcibly of the milder form of yellow fever which infected our city in 1858. Within a few days thereafter, between the 15th and 20th of August, I was called to cases in extremely diverse sections of the city, which exhibited more decidedly the severer symptoms of the disease, the paroxysms of fever being longer, more obstinate, and more typhoidal, the skin more sallow, the pains in the head, back, lumbar region and extremities more severe, and frequent and obstinate vomiting of bile, and frothy, glairy mucus oftentimes present. The advance in the type of

disease from the milder and more erythematous to the congestive, malignant and typhoid, was so rapid in different localities that I at once advised my friends that in my opinion we were on the threshold of a pestilence more terrible than that which had devastated our fair community in 1854! How soon and how awfully was this dreadful prediction fulfilled! By the first week in September the cloud of suffering hung like a pall over every district, and misery and woe found echo only in the wail of the mourner and the dull thud of the coffin.

Here began the heroic work of our medical fraternity of all schools, each and all of whom battled with the destroyer with fortitude, patience, industry and endurance, that will ever in its memories warm my affection for the devoted band of co-laborers, whose visiting rounds occupied all hours, from the rising of the sun to the small hours after midnight—sixteen to eighteen hours' actual, constant traveling during every successive day being no uncommon task to those of us upon whom fell the heaviest burdens of the work, and this lasting without intermission or possibility of respite from the second week in September to the middle of October. My own work will give a just idea: My visits to different houses scattered through all sections of the city, averaged for the second week of September, 80 a day; for the third week, 90 a day; and for the fourth week, 100 a day—the highest daily round being 106 visits on Sept. 30th; after which the decline was somewhat more rapid than the advance. Indeed, I was so exhausted, that I was compelled to reject numerous additional calls. In many houses there were three, four, five or six cases to be treated, so that my average examinations of cases varied from 130 to 180 a day during this month of enormous work.

Yellow fever has been truly called a *poly-headed monster*—indeed, the more experience I have in connection with this subtle disease, the more inclined am I to give it the classic term of "*La maladie du Diable*." In some cases there were symptoms of warning, langour and general malaise, cerebral distress, loss of appetite, feverish flushed skin, and a gradual advance to the more positive symptoms of the

RECEIVED

disease. In others, little or no premonition existed—the attack coming on suddenly with or without chilliness, oft-times with a simple creeping shuddering, rapidly sweeping into the intensity of febrile irritation. The mind was in most cases excited and alarmed, until it became an absolute necessity for the physician to persuade his patient that those who said he had yellow fever did not know what they were talking about. Others again realized the nature of their attack, and would say, “Do the best you can for me, doctor; I am not at all alarmed;” and with well-poised confidence in their physician and their chances of recovery, would pass through the varied stages of even the severer grades of the disease, with as much *sang froid* as a man would get himself out of a river into which he had accidentally been immersed. In hundreds of instances, as the desired physician entered the sick room, the patient would philosophically compose himself with the comforting exclamation: “I’m all right now; I’ve got you to attend me!” So potent on the mind of the sufferer is this influence of confidence in his attending physician. Of course it does not always hold good in result; but I am persuaded that it is of vast effect in a considerable proportion of cases. The mere term *yellow fever* is so full of terrible import, that I think the general alarm existing during an epidemic of this disease is similar in its operation on the afflicted to the fright that carries away so many helpless beings during a scourge of its twin-destroyer, cholera.

Many cases were of an extremely mild character, especially during the early period of the epidemic, and would scarcely have been recognized but for the manner in which it swept through almost entire households. The face was flushed, the eyes slightly reddened, the skin hot and dry, the pulse quick, full and regular, the frontal headache moderate, the urine but little altered, little or no emesis, and the bowels generally confined. In from twelve to thirty-six hours the fever declines, a gentle transpiration exudes through the skin, and the disease passes away without much consecutive prostration. This was the simplest type of the disease. In some of these cases there appeared an efflorescence on the

skin, erythematous in character, and slowly fading away; and in others there were slight attacks of nose-bleeding.

Others, severer in degree, were attended with delirium, bounding full pulse, throbbing and darting frontal headache, red suffused eyes, severe pains in the back and extremities, and intense general bodily aching and distress, with occasional nausea and vomiting, chiefly of biliary substances intermingled with the contents of the stomach—mostly with high-colored urine and lethargic bowels.

Again, there were cases of a distinctly congestive type, without malignant complication, in which the pulse was rapid, and at times full and hard, and at other times small and tremulous; the temperature high; the thirst intense; the redness of the eyes less marked, but the nausea and vomiting more frequent, obstinate, and of a more mucous, frothy quality; the mind anxious and alarmed, with moaning, sighing and tossing about the bed. In these cases the pulse usually rose to 130 or 140 within the first twelve hours, and began to recede or remit towards morning of the day following. The gastric irritability was severe and easily excited by almost any liquid introduced into the stomach; the pains of the head, back and extremities often distressing to the sufferer; the urine more scanty and orange-colored, and the bowels confined. Milk and champagne frequently soured on the stomach and were speedily ejected; but iced soda-water, and cracked and pounded ice in constant small quantities, proved peculiarly grateful.

Again, there were cases of a malignant congestive type, in which, in addition to many of the symptoms above recited, there was a dry, red, parched and crusted tongue; the countenance exhibited a dull and stupid look; the chin at times hung down; the eyes deep red and congested, at times crossed, and at times with pupils dilated; the brain congested and comatose, anxious and muttering delirium; the urine scanty, dark red and strong-smelling; the skin reddish or yellow, at times burning hot and dry, and at times covered with profuse hot and alternate cold sweats; the *fever-smell* intense, and the bowels mostly confined, but occasionally discharging flocculent watery fluids. These cases,

when not reacting, passed rapidly through the condition of uræmia and black-vomit, and death ensued between the third and fifth days.

Again, there were numerous cases of the hæmorrhagic type, in which the fever assumed a remittent, continued or typhoid character. The eyes were at times red and at times yellow; the skin but slightly altered, and again sallow, orange-colored or mottled; the tongue at times moist and natural, again coated with a heavy white or dirty yellowish fur, and again rough, corrugated, parched, crusted and bleeding; the nose thin and pointed; the lips thin and pale, or red, cracked and bleeding; the gums sore and congested; the mind less disturbed than seemed warranted by the general condition, but at times indifferent and dull; occasional thin sanious discharges from the nasal, buccal, urinal and intestinal mucous surfaces; clammy colliquative sweats frequently present; occasional vomiting of frothy, glairy mucus, often followed by dark flocculent hæmorrhagic emesis, and again a general lethargic condition of the bowels.

Again, there were cases of a type closely resembling malignant petechial fever, in which the blood appeared disorganized from the beginning of the attack; the headache less violent but more depressive; the mind excited and anxious, and at times running into restless delirium, until the patient appeared as if suffering from delirium tremens, jumping up and out of bed, attempting to escape through the doors and windows; little or no pain complained of anywhere; the urine scanty and speedily suppressed; the vomiting frequent, spasmodic, and rapidly passing from the muco-flocculent to the coffee-grounds ejecta; the pulse and temperature, after the first febrile flush, oftentimes approximately normal; the bowels at first lethargic, but later pouring out similar fluids to those ejected from the stomach; clammy sweats breaking through the leadened and mottled skin, and the unhappy victim rapidly sinks into collapse, coma and death.

And again, there were many cases of the (assumed only) characteristic type of yellow fever, in which the orange tint of the skin was decided, the buccal membranes softened and

hæmorrhagic, thick dark brown and black incrustations of disorganized blood around the lips and *alæ nasi*, coffee-ground vomits and similar and tarry-looking dejecta, suppression of urine, delirium, carpalgia, and final collapse from exhaustion and colliquative discharges.

After the transition beyond the earlier stages of the disease, many cases of different types developed into a secondary nervous, continued, or typhoid type of fever, which was often more troublesome and harder to manage than the earlier form of the attack; and others again remained for weeks, and even during the entire season, in a state of easily excited febrile flush, which required but little imprudence to again put on the alarming conditions of *relapse*.

I did not observe during this epidemic a great proportion of *erythematous* or other *eruptive manifestations*; indeed, I may say that such exhibitions were comparatively infrequent. But there were large numbers of cases presenting the *orange-hued skin* in all degrees, from the pale lemon to the deep, mottled, yellowish bronzed tints; and this discoloration was more especially apparent in the malignant congestive, hæmorrhagic, typhoid and petechial types of the disease. Nor was it always present at the inception of the attack, but displayed itself more frequently during the progress and in the later stages of the malady. Still, there were not a few cases in which it was well marked from the very inception of the disease.

The redness of the eyes was a more common symptom in all types, though I saw numerous cases, particularly in the severer grades of disease, in which it was scarcely noticeable at all.

The most uniform symptoms in all types were redness of the eyes, frontal headache, flushed countenance, mental alarm, nausea and vomiting, pains in the head, back and limbs, high-colored scanty urine and lethargic bowels—an embodiment of symptoms pointing directly to the sympathy of the spinal system of nerves in the general orgy of suffering; and this sympathy was especially manifest in the *atony* of the abdominal nervous forces as well as in the frequent dilatation of the pupils of the eyes. Occasionally this latter

symptom was so prominent, that I held a lighted candle in front of the eye to test whether effusion or cerebral congestion existed, but was generally agreeably comforted with the readiness with which the pupils contracted, and persuaded myself that the dilatation arose from *atony*, or loss of contractile power of the nerves controlling this circle. This diagnosis was in perfect harmony with the general exhibitions of nervous prostration throughout the entire system.

The indications of the tongue could not be relied on in any class of cases—except the malignant, congestive and typhoid. There were clean tongues, and white and yellow-coated tongues, moist tongues, and dry tongues, tongues with clean surfaces and red margins, and coated surfaces and clean margins, crusted tongues, and red, seared, parched cracked, and bleeding tongues; and these conditions were as common in the cases that recovered as in the cases that died.

Anorexia was more uniformly present, especially during high febrile excitement. Yet I have seen cases in which *intense hunger* existed during the fever, and became craving immediately thereafter. No one indication was more uniformly *favorable in prognosis*.

The gastric disturbances usually began with vomiting of biliary fluids, followed successively by frothy and glairy mucus, degenerating into flocculent and coffee-grounds ejecta in the more malignant cases. Whilst the emesis in the earlier stages of the disease was usually severe and straining, in the later stages, and especially after the decadence to black-vomit, the fluids in the stomach were gulped up with spasmodic force, sufficient oftentimes to throw them all over the bed, upon the floor, and not infrequently against the walls of the room. This ejection is similar in spasmodic nature to the spirting ejections so common in cases of cerebral disease.

The *urine* was usually scanty, high-colored and strong-smelling in the earlier stages; and of a brown, reddish-brown, or greenish-brown color later in the disease, especially in the jaundiced and malignant types; and in these types also we find the profuse colliquative and biliary sweats, often stain-

ing the clothing and bed linen, and compelling their frequent changes.

The bowels.—A wonderfully prevalent symptom in all types of the disease was *the lethargic condition of the bowels*, which my friends of the old school regarded as a state of constipation, and applied their purgative treatment accordingly—unhappily too often bringing on that which was most to be avoided, an irritated state of the alimentary canal, usually leading to severer emesis, prostration and collapse. I do not think a greater mistake can occur than the adoption of such treatment. The bowels are *not constipated*; for the very excreta expelled by this forced purgation were generally of a lax or fluid consistency. On the contrary, this inaction is clearly due to *nervous atony*, and that treatment alone is safe which looks to a renewal of the nervous powers of the system, so that the abdominal nerves may recover from their atonic state and again fulfill their natural peristaltic function. The system is so overpowered by morbid influence, that its nervous forces lie prostrate under the feet of the destroyer—the disease primarily attacking the circulatory and prostrating the nervous apparatus, and rapidly extending its sphere of action to the mucous structures, which successively soften and disintegrate, and to the internal functional glandular organs, from which follow atonic and congestive conditions of the liver and kidneys. I have seen uræmia and black-vomit in all the severer types of the disease; but the unjaundiced hue of the skin in the great majority of the cases renders it seriously doubtful whether the mahogany-colored liver could have existed without cutaneous and sclerotic pigmentary sallowness, the evident effect of atonic hepatic functional derangement. Symptoms were piled on symptoms to indicate the rapid disorganization and disintegration of the blood—congestions of the cutaneous and mucous surfaces, leaden and purplish hues of the skin and lips, hæmorrhagic discharges from the nasal, buccal, cystitic and intestinal mucous linings, erythemata, petechiæ, etc. The hæmorrhagical malignant, congestive, typhoid, orange-hued and petechial types of the fever, especially, furnished abundant proof of the steady decomposition of this

life-sustaining fluid. In the earlier stages of these types, the hæmorrhagic discharges were often but little deteriorated; but as the disease progressed, they became darker, more disorganized and decomposed, until the exudations of flocculent and coffee-grounds black-vomit followed each other in quick succession on the road to death. Not unfrequently the lips and *alæ nasi* were cracked, and the oozing blood incrustated itself thereon in black and hardened masses, until respiration became difficult and reception of food by the mouth almost an impossibility.

A symptom of almost certain fatal premonition appeared even in the earlier stages of some of the malignant, congestive, orange-hued and petechial cases—*purple lips*. Whenever I saw this unhappy omen, I at once warned the family of approaching danger.

A remarkable functional disturbance showed itself in a large number of cases of females who had passed the age of puberty, viz., the appearance of the catamenia during the progress of the fever, and this without reference to its usual monthly periodicity. So frequent was this derangement, that I habituated myself to direct inquiry as to its exhibition in every case where the age of the patient rendered its secretion possible. The discharges were almost always thin, dark and unclotted.

I am not prepared, however, to endorse the generally accepted doctrine that yellow fever necessarily or even frequently produces *abortion* in pregnant females. No such misfortune occurred in a single instance out of numbers of gestative women who came under my care, one of whom I particularly remember, because of the intense anxiety I felt regarding her case. She was a stout, ruddy, plethoric German woman, seven months advanced in pregnancy, and had one of the severest attacks of yellow fever observed by me during the epidemic, her pulse ranging from 140 to 150 per minute for an entire week, and the disease being complicated with hæmorrhages from the nose and mouth, the tongue dry, red and parched, an extensive purplish-red erythema spread over her face and body, and nightly delir-

ium frequently present. Yet, under the benign influence of homœopathic remedies, she passed safely through the fiery ordeal, and was delivered of a healthy child about two months thereafter. If *abortion or miscarriage* has been found frequent under purgative allopathic treatment, such misfortune is more probably due to sympathetic irritation of the womb, *created by adjacent intestinal straining* (as in dysentery), resulting from their system of forced anal discharges, just as puerperal fever so often results from their third day dose of oil after confinement, before the abdominal viscera have had time to recover from the soreness and inactivity caused by the pains of labor. I recall two cases of this kind to which I was called in the emergency. One had already miscarried, the child lying dead between her legs when I got there; the other was in violent forcing labor which was soon over, and by the severity of which the child was so crushed that it lived but a few hours after birth. Both of these mothers had been *purged secundem artem*.

The pulse presented many anomalous features. Generally full, hard, bounding and rapid, there were not a few congestive and malignant cases in which it was small, thready, feeble, tremulous and slow; and again other cases in which it was full, compressible, and squeezed down by cerebral congestion, until the temperature would often mark 103 to 105 degrees, with a pulse languid and declined below the normal standard. I saw two cases in one room, one an old lady of 70 years, whose pulse descended gradually until it beat only 36 to the minute, whilst her temperature was nearly normal, and her mind remained intelligent and clear; and the other, a boy of 18 years, whose pulse kept on going down until it reached the phenomenon of 30 beats to the minute, attended with hæmorrhagic discharges from the bladder and flocculent, dark black-vomit dejections, but with no other marked symptoms beyond a singular nightly delirium. Both of these cases recovered.

The temperature also exhibited many remarkable phenomena; I have seen black-vomit and suppression of urine with violent meningeal excitement, with a pulse at 150 and a temperature at 105; and again the same conditions with a pulse

at 60 to 150 (and higher in children), and at all degrees of temperature from 105 downwards, until it fell below the normal standard.

I regard the *aggregation of cases* in beds, rooms and houses as one of the most serious errors that can be committed in their distribution; and I have frequently known cases, mild in their incipency, to take on the malignant features of other adjacent cases, and to absorb from the beds, on which previous more malignant cases had lain, the more destructive features of these associate cases.

Again, in some houses and some quarters most of the cases presented milder characteristics, whilst in other families and other locations almost every case partook of malignant, congestive, hæmorrhagic, or typhoid similarities. This was especially the case where they occupied similar beds, and the same or adjacent rooms. It is on this theory alone that I can account for the alarming fatality that usually attends upon hospital treatment.

The characteristic smell of yellow fever is as intense as that of variola, and more dense in proportion to the number and severity of cases crowded together; and no part of the hygiene is more important than free ventilation, prompt removal of the excretions, and clean changes of the clothing and bedding, after they have become strong-smelling from saturation with the sweats and excretory fluids of the patient. I have never seen any trouble arise from careful attention to these necessary adjuncts of cleanliness.

Intemperance piled up its victims during the scourge of 1876. Whilst many persons addicted to such habits escaped, most of whom were veterans who had passed through previous epidemics, the pro rata of those who died in ratio to the number who were stricken down by the disease is filled out to savage proportion on the death roll of the victims. In most of these cases which came under my notice, the fever rapidly assumed the malignant and petechial types, and flocculent and coffee-grounds vomits and collapse hurried them into untimely graves. I scarcely remember a case among this class of patients which wended a slow course into the typhoidal state. In most, delirium, nervous tremor and ex-

haustion hastily succeeded each other, until black-vomit and collapse ended the struggle.

Desiring to present to my readers not the post-mortem exhibitions of structural alteration, but a true picture of yellow fever as it paints itself on the living body, I deem it appropriate to cite a few characteristic cases of its various types as seen in the epidemic in this city in 1876, so that the experienced and inexperienced may seem to go with me to the bedside of the sufferer, and glean knowledge from the cauldron of human woe.

The milder types have already been sufficiently well described to render separate illustration unnecessary, except to add that they readily yielded to Aconite and Belladonna tinctures, in watery solution of five drops to a tumbler of water, given in table-spoonful doses in hourly alternation, warm mustard foot-baths being additionally employed to facilitate transpiration. In some cases, Arsen., Ipecac., Merc. sol., China, Nux vomica, Rhus tox., and Sulphur were found useful in relieving associated derangements. After the subsidence of the fever I generally used Sulphate of Quinine to ward off a secondary recurrence. Much controversy has at times existed in regard to the use of this remedial agent in large doses, and objections have been strongly urged by Homœopaths, especially against this *violation*, as they are pleased to term it, of the *dose-law* in the use of similars. Experience, however, is an excellent teacher; and whilst it is perfectly clear that a remedy may be employed in full accordance with the foundation principle of "*similia similibus*," we can only determine the effect of the *quantity* by the result of its action. If any one result has been settled by the experience of practitioners, it is that *large doses of Quinine* should never be given during the *rise and high stage of fever*; but when employed in the intermission, remission or decline of febrile excitement, it possesses the happy faculty of cutting off the further progress of the disease in a large proportion of cases. Whilst the heroic doses given by some of my Allopathic friends, contrary to the laws herein cited, did, in my judgment, cause much of the local congestion incident to its primary action, I rarely found

cause for distrust of its beneficial effect when used in accordance with the above rules.

SPECIAL ILLUSTRATIVE CASES.

CASE I.—*The non-malignant or congestive type.*—Dr. S —, æt. 40, was taken down with the fever on the morning of September 12th. Driving to his office, I found him lying on a lounge, having given up after making some twenty or more visits during the early morning. His pulse was 120, skin sallow, eyes dull and heavy, frontal headache, frequent yawning and stretching, intense thirst, and pains in the back and limbs. I immediately ordered him to bed, and sent for and placed my mother in charge to carry out my instructions. Hot mustard foot-baths were applied every three hours, and Aconite, Belladonna and Arsenicum given internally at alternate half hours. The pulse and temperature rapidly rose, until the former reached 136 and the latter $103\frac{1}{2}$, and at this grade the disease pursued its steady course until after midnight, when there were slight symptoms of moisture on the forehead. I retired for a little rest until 4 o'clock A. M., when I was roused by a friend of Dr. S.'s, who had been watching him for me during the earlier hours, and on examination found the pulse 120 and declining, and considerable perspiration over the body. Waiting until 6 o'clock, I again counted the pulse, which had fallen to 108 and become softer, the brain less excited, and the general pains less troublesome. I then administered Sulphate of Quinine in 6 gr. capsules, one every hour for six hours, keeping up the other remedies in the intermediate half hours. The pulse steadily declined until it fell below 90, the temperature lessened to 100, the headache subsided (not even the roaring, fullness and other indications of the primary action of the Quinine showing themselves), the mental depression was greatly relieved, and the fever was so thoroughly broken that it never rose again. Considerable prostration, nausea and abdominal uneasiness and flatulence existed for several days, but convalescence was steady and uninterrupted, and a week or ten days thereafter he left for Richmond county on a recuperative excursion. The associate symptoms in this case

were controlled by Ipecac., Merc. sol., Nux vom. and Tart. emet. The intense thirst was appeased by constant and unremitting supplies of cracked and pounded ice and iced soda water; but champagne speedily soured on his stomach, and was violently ejected therefrom, and this, too, in the non-febrile stage, when it is so highly recommended by other writers. I observed this in a large number of cases, and also that *lemonade* was the frequent cause of severe pains in the abdomen.

CASE II.—*The congestive meningeal type*.—Miss E. B. S.—, a child, æt. 9, was attacked with fever on the morning of September 6th. Calling to see her brother, who was then dangerously ill with the disease, I found her sitting on a chair in his room. Her languid appearance impressed me strongly, and on examination I found her pulse 120, small and nervous, the skin hot, flushed and dry, the countenance anxious, and a general heavy, oppressed state of her system manifest. She was at once placed in bed, hot foot-baths applied, and Aconite and Belladonna given alternately. The pulse rapidly increased to 150, and the temperature to $105\frac{1}{2}$; the march of the fever continued at this rate almost without a lull, the pulse falling to 136 an hour or two on the morning of the 8th, but quickly advancing to and beyond its previous frequency. The nausea and vomiting was excessive and incontrollable, the ejecta consisting at first of watery, frothy, glairy mucus, and this again rapidly degenerating into dark, flocculent and subsequent coffee-grounds black-vomit. The urine, at first scanty and orange-colored, finally became suppressed; and the bowels, lethargic in the beginning of the attack, finally discharged black, tarry-looking ejecta, attended with incessant straining efforts. The brain was wildly excited, until her frequent shrill screams and snappish, passionate utterances could be heard all around the neighborhood. She would stand up erect on the bed, and wildly entreat to be allowed to get out of it; and finally, on September 10th, she sank back exhausted and glided into eternity. In this case black-vomit came on and continued while the fever raged in its greatest intensity; nor was there any decline of the pulse following upon this ominous indi-

cation of approaching disintegration. Little perspiration showed itself at any stage, except the cold sweats of the death throe, the tongue became nearly natural, the eyes became more yellow and the skin of a pale lemon tint as fatal indications appeared, and the whole force of the disease seemed to expend itself upon the nervous and circulatory systems, until the blood was destroyed with a steady, consuming fire, and Nature, exhausted, sank into collapse and death.

A singular circumstance in connection with this case was this: About the last of December I was called to see her sister, æt. 7, who returned to the city after frost, and slept in the bed on which the other had died. The case appeared in all respects similar to the one above described, and about the fifth day a well marked emesis of dark, flocculent, hæmorrhagic black-vomit occurred, and continued at intervals for several days. On the ninth day suppression of urine followed, and no water was passed for nearly forty hours; percussion over the region of the bladder yielded a hollow, tympanitic response. Stupor, carpologia and great prostration, attended with clammy, disagreeable sweats and muttering delirium, rendered the prospects of her recovery ghastly indeed. I had given her all the usual remedies considered appropriate to her desperate condition, and was now resting my hopes on Sulphuric acid (in watery solution strong enough to be distinctly tasted) and Arsenicum. In addition, in this extremity, I administered a teaspoonful of Spts. Nitre, with a tablespoonful of gin, in a *wine-glass of watermelon seed tea*, every third hour. She had not swallowed more than two or three doses of this mixture before the urinary secretions returned in large quantities, and were maintained thenceforward; the brain became less oppressed, the colliquative sweats diminished, the typhoid crusted tongue gradually resumed its natural appearance, the pulse and temperature slowly declined, and I discharged her doing well on the twenty-first day. This is a fair specimen of a number of cases of typhoid fever, occurring during the winter as sequelæ of the previous epidemic. The three last cases of flocculent

black-vomit with suppressed urine, which came under my care, were promptly relieved in a similar manner.

CASE III.—*The malignant congestive type.*—Miss E. S.—æt. 18, full habit, plethoric temperament, was seen by me on September 27th, having been taken sick some hours previously. Her face was deeply flushed, eyes very red, deeply congested, rolling and crossed; the pulse 140 and full, throbbing and hard, intense throbbing and oppressive headache, and anxious delirium and alarm; the respiration hurried and labored, the skin hot and dry, the complexion of the body of a venous red hue, violent pains in the back and extremities, scanty dark red urine (afterwards suppressed), lethargic, confined bowels, and great restlessness and tossing about the bed. The tongue was dry and red, the lips parched, and intense thirst and gastric irritability existed. The temperature was high, and the transient sweats brought out by the foot-baths rapidly dried up again. This state continued without relief, the congestive symptoms increased, uræmia, and flocculent and coffee-grounds vomits rapidly succeeded each other, and death took place on the third day of the disease. This was one of the most rapidly destructive attacks seen by me during the season. Like case II., it ran a violent course from beginning to end, and black-vomit and uræmia exhibited their direful symptoms, whilst the fever raged with intensity. Towards the close of life the brain became stupefied from uræmic poison, and she sank into a comatose state and death ended the scene.

In viewing these cases the thought naturally arises, does not the association of scanty and suppressed urine with softening mucous membranes degenerating into mucosaneous, hæmorrhagic, flocculent and coffee-grounds black-vomits, indicate putrid and petechial disorganization of the blood from poisoning with similarly disorganized urine? And can the suppression of an urine not altered in its composition give rise to such a train of destructive alterations? In case III., the congestion of the brain and kidneys took place in the very inception of the disease, and blood decomposition, black-vomit and uræmia speedily followed.

The peculiar *indications of approaching uræmia* are well worth recording. The patient, though at times wilder, usually became more quiet; complains of no pain anywhere; when asked how he feels, will look at you for a moment before replying, giving you the impression that he is studying what answer to make, or as if your query took time, like a telegram, to traverse the auricular nerve to the brain, produce its impression there, and bring back the response through the lips. At other times, particularly before uræmia is far advanced, he will answer in quick, short-spoken, monosyllabic sentences, "I feel very well!" "Does anywhere hurt you?" "No!" Gradually as this condition advances, however, the brain becomes stupefied and comatose, the head sinks down from the pillow to the bed, or the occiput bores into the yielding pillow, and it is almost impossible to arouse him even by vigorous shaking—scarcely at all to obtain an intelligent recognition or response, and often not even a vacant stare. In several instances, however, I observed remarkable exceptions to this torpid state, which I will more fully illustrate hereafter.

CASE IV.—*The malignant meningeal type.*—Judge L. S. R., æt. 67, was first seen by me on September 11th, when I found him in a state of cerebral congestion, with muttering delirium and constant tremulous, sighing, moaning, as if he would give all the world to be able to tell of his distress. The head was bored down in the pillow, the eyes congested and blood-shot, the skin of a deep venous hue, the tongue heavily plastered with a dirty yellowish white fur, extending completely over its margins, the pulse full, slow and compressed, beating only 56 to the minute, the temperature but little elevated, the urine scanty and of an orange-red hue, and the bowels lethargic. No vomit or hæmorrhage, or jaundice of any kind occurred, but the strong smell of the fever was intensely characteristic, and the ever present tremulous moaning distressing to listen to. In this state he lingered for two days, until his troubled spirit left its earthly frame. Death seemed caused by cerebral congestion and nervous exhaustion.

CASE V.—*The malignant congestive hæmorrhagic type.*—F. B., a lad æt. 16, was first placed under my care September 22d, and presented as desperate a picture as I witnessed at any time in the earlier stages of the disease. His pulse was full, hard, throbbing and 120; the skin of a mottled-lead and venous hue, discolored with brownish and petechial patches, and later in the attack resembled the mahogany-yellow streaks that are apparent in cases of venomous poisons. The eyes were dark red and crossed, the tongue dry, parched and cracked, the gums sore and bleeding, and the lips of a bluish-red color. He rolled and tossed and groaned like a man I once saw under the influence of a rattle-snake bite; violent emesis came on and vomiting of a glairy, frothy mucus was soon followed by flocculent, dark hæmorrhagic ejecta. The urine was strong smelling, of a reddish brown color, and at times somewhat sanious; and after two days lethargy, dark flocculent dejecta were expelled from the bowels. The brain was restless and alarmed, the headache heavy and oppressive, the lumbar pains violently intense, and the extremities rolled and tossed in agony. About the third day paralysis of the bladder supervened, and the urine had to be drawn off with a catheter. As this paralysis came on, the brain seemed less oppressed and more intelligent, the pulse lowered to 96, and the general aching and restlessness became less troublesome. I ordered him to be placed in a sitting position in a tub of cold water and bathed freely around the pubic, lumbar and sacral regions every three hours, and administered internally Sulphuric acid, Belladonna and Nux vomica, at alternate periods of an hour. In a few days the severer symptoms gradually declined, the bladder resumed its normal function, and recovery was soon complete. The dependence of the pains in the extremities upon spinal irritation was peculiarly exhibited in this case by their subsidence after paralysis of the cystic branch of nerves.

CASE VI and others together.—*The hæmorrhagic and hæmorrhagic congestive types.*—The most characteristic association of cases of this class came under my treatment in a family named M—, on Harris street, near West Broad,

and in the neighborhood of which many desperate cases had previously occurred. Here I had five children, ranging from 6 to 18 years of age, under my care together. Several at times displayed jaundiced hues of the skin, all had at various times, and especially during relapses, hæmorrhages from the nose or mouth, one or two of the boys ejected dark, flocculent hæmorrhagic emesis, and the daughter, a young girl, æt. 15, passed into the malignant congestive state, the brain being stupid and comatose, the eyes dull and yellow, the skin of a pale yellow tint, bleedings at the gums, and flocculent and coffee-grounds black vomit, which continued at intervals for about a week. At various times partial or complete suppression of urine came on, and cold, colliquative sweats, cold body and extremities, cold face and tongue, diminished temperature, and heavy, stupid lethargy promised speedy dissolution. I placed the whole party under Sulphuric acid and Arsenicum, and alcoholic stimulants and strong nutritious diet, and to the daughter more especially applied frequent warm alcoholic lotions, and rubbings with mustard. It was a struggle of life and death with her for well nigh a fortnight, but finally the disease yielded to the perseverance and devotion of her nurses and attendants; and with all her brothers she rejoices in restored health and strength.

I have cited this set of cases for the special purpose of illustrating how the aggregation of cases in the same or adjacent rooms causes frequent relapses, constantly putting on greater similarities of type because of re-absorption of similarities of poison from one to the other. Several of the cases were comparatively mild when first taken; but each and all, from constant re-infection, suffered subsequent similar hæmorrhagic relapses. It is an unquestionable fact connected with the late epidemic that no one, two, or any number of attacks, rendered the individual exempt from re-infection and subsequent relapse. But one sure relief was afforded and that was in quitting our infected atmosphere; and even this failed in many unhappy instances in which the system had been surcharged with the poison before the victim left the city.

CASE VII.—*The hæmorrhagic typhoid type*.—Patrick Boyle, an Irishman, æt. 40, came under my care September 3d; pulse 60 and apparently normal, temperature slightly elevated, nervous symptoms remarkably quiet, except a wandering delirium during portions of the night, slight dull headache, mind intelligent and composed, anorexia and gastric irritability, eyes congested and deep red, tongue dry, seared, red, and polished and glistening near the margins, extensive cutaneous efflorescence, dark red, scanty urine and lethargic bowels. The emesis was at first of a glairy mucous nature, but on the fifth day he ejected dark flocculent substances, like threads of beef boiled into extreme fineness. I placed him under Bellad. and Rhus tox. during the first four days, but on the appearance of these hæmorrhagic symptoms, I at once administered Sulph. acid and Arsenicum, and ordered brandy stimulants intercurrently with beef broths. Under this treatment the symptoms gradually improved, the pulse crept back to 72, and I discharged him on the eleventh day of my attendance.

CASE VIII.—*The mild nervous typhoid type*.—J. A. B., a merchant of sober, temperate habits and nervous, sanguine temperament, sent for me on November 2d. He appeared quite comfortable, and said to me jovially that he didn't know whether there was much the matter, but he didn't feel exactly right and thought he had better call me in. He had but little headache, face and skin flushed and slightly erythematous (the eruption becoming more marked at a later period of his illness), pulse quick but not hard, eyes red, tongue moist and clean on the centre but bright red on the tip and margins, lips of a bright cherry-red hue, appetite good (ate three light made meals every day during his illness), bowels natural, brain undisturbed, sleep not always satisfactory, urine of a pale orange color, pulse ranging from 84 to 112, and temperature from 100 to 103½. Every forenoon he would experience a chilly shuddering, followed by a rise of fever, lasting from three to five hours, and subsiding again until the pulse would fall to about 88 and the temperature to 101. There was no nausea, nor jaundice, nor intestinal disturbance, nor hæmorrhage—nothing but the continued

nervous fever, with the intermittent daily increase, and erythematous flush. His system was evidently not seriously disorganized by the poison of the fever. Neither Quinine, nor Arsenic, nor Fowler's solution, nor Eupatorium, had any apparent effect in removing the intermittent complication; but this and the whole morbid state was relieved by Sulphur given towards the close of the fourth week.

CASE IX.—*The malignant orange-colored type.*—Miss M. V. M., æt. 14, came under my care on September 23d. Her skin was of a decided jaundiced hue, the eyes yellow and lids drooping, pulse 120 and hard, nausea and vomiting of biliary fluids, lethargic bowels, anxious, alarmed condition of the mind, beseeching speech, dull, heavy headache, high colored scanty urine, and intense mental anxiety and fear of death, attended with great prostration and restless tossing about and sighing as in distress. The lips were *purple*—*an unfavorable omen*. The disease steadily progressed, the urine became suppressed, the brain sank into a comatose condition, the head bored down in the bed, the chin drooped, black-vomit was spasmodically ejected from her stomach, the sweats of death exuded from her features, and her tender spirit fled from its poisoned encasement. The disease ran its course in seven days.

CASE X.—*The orange-colored Typhoid Type.*—W. S. P., U. S. Signal officer, was taken sick at Tybee Island and brought to the city under the care of Dr. Smith, with whom he became dissatisfied and sent for me on October 9th. His two colleagues had been already stricken down with the fever, and he was in a state of almost uncontrollable alarm. His pulse was full, heavy and hard, his face and body of a venous congested hue tinged with yellow, the eyes congested and jaundiced, the tongue heavily coated with a dry brown fur, and its tip and margins red and parched, the skin at times dry and at times tempered with transient moistures, the stomach irritable, with frequent nausea, gagging and biliary emesis, the urine scanty, dark red, and attended with frequent efforts at micturition, the bowels lethargic and flatulent, and severe pains in the head, back and extremities. By some unguarded means he obtained information of the

death of one of his companions, and the approaching death of the other. Then followed a state of irritable, anxious, restless alarm, quarrelsome distrust and delirium, obstinate, hard-headed interference with his bowels, and alternate quiet and ill humor, the like of which I have never seen in any other case. At times placid and hopeful, the least flatulent gripe or nervous pain sent him reeling again into the seething vortex of unsatisfiable anxiety. His constant theme was the state of his bowels and kidneys, and his constant demand was for frequent rectal discharges. For his intestines to remain unpurged for a day, was to his mind a certain road to death. During daylight, he was comparatively manageable, but his nights bordered on the wild excitement of *delirium tremens*. The pulse and temperature became variable and unreliable, the skin, at times almost mahogany colored, was at times hot and dry, and alternately covered with profuse clammy sweats, (especially during sleep) which stained his clothing and bed linen, and gave to them such strong, rancid odor, as to compel their frequent change; the urine scanty and red, and attended with constant desire for its frequent emission, and during the third week, *dark brown, tinted with a deep green shade*. After the twenty-first day, the disease slowly passed away, and on November 10th, I discharged him from further treatment and sent him in the country to recuperate. The details of the treatment of a case like this would be too lengthy for my present space.

CASE XI.—*The Colliquative Type*.—On September 14th, I was requested by a member of the Benevolent Association to call and see Winnie Home, a colored woman, æt. 25, who, during the previous night, had been nursing a white man dying with black-vomit, and who had been terribly frightened by her lonesome nightwatch at the bedside of the corpse. I found her in a complete state of collapse, the eyes sunken, the face hippocratic, the body cold and clammy, cold sweats dripping from the cutaneous surfaces, the pulse feeble, tremulous and intermittent, the voice husky and whispering, black sordes around the teeth and gums, and black-vomit dejecta pouring from her bowels. The mind

was clear, but frightened, and the stare of death seemed already glazing her vision. I immediately placed her under Sulphuric acid and Arsenicum in alternation every half hour, and ordered brandy stimulants to be given in table-spoonful doses each intermediate fifteen minutes. Alcoholic fomentations were also applied with warm flannels to her abdomen and extremities. I called again in the evening, doubting whether I should find her alive, but was gratified to discover a slight reaction, which steadily continued until I discharged her well on September 18th.

CASE XII.—Referring to the absence of coma in some cases of uræmia, the following case illustrates my statement. On November 16th, I was called to Bresnan's Hotel to see a man named Charles Ewald. When I pronounced the case yellow fever, the proprietor declared he could not remain there, as it would frighten off his boarders; and within an hour had the sufferer removed to St. Joseph's Hospital, where he died on November 21st. From the time I first saw him to the hour of his death, six days, not a drop of water was secreted through the kidneys, but a copious, watery, dark flocculent discharge took place at irregular intervals from his bowels, and was accompanied during the last two days by coffee-grounds black-vomit. The pulse declined below 100 after the first day, the temperature ranged from $97\frac{1}{2}$ to 101, and the brain remained clear until the day of his decease. The eyes were congested, and the lips and skin of a leaden venous hue, but the cutaneous pigment remained unjaundiced.

CASE XIII.—This list of special cases may be fitly concluded with one of peculiar features. Mrs. T., æt. 19, who returned to the city after frost in the latter part of November, was taken in labor during the morning of December 21st, and delivered at midnight. During the labor she suffered from intense thirst, some febrile excitement, and profuse perspirations. When I called to see her early the following morning, I found her with all the symptoms of a mild case of yellow fever, which ran its course and terminated favorably. The infant was completely jaundiced, refused to nurse, and its pulse barely numbered 80 beats to the minute. In this

state it continued about five or six days, and on the second or third day ejected from its stomach unto its gown what I took to be black-vomit. This opinion was concurred in by Drs. Semmes and Myers of this city, to whom I exhibited the stained garment. The case was relieved by Sulphur.

Between the above types were thousands of cases of all shades of combinations and modifications. The simple and erythematous types generally terminated favorably, though many of these took on severer grades of the disease in subsequent relapses. Much of the treatment adopted by me has already been illustrated, but some special conditions deserve direct reference. Whilst it is uniformly advisable to establish a free perspiratory secretion *during the rise and progress* of the inflammatory and congestive types of the fever, it is equally important to control the *colliquative and debilitating sweats* which often manifest themselves after febrile subsidence. Here again I found the dilute Sulphuric acid of great value.

I never disturbed the bowels, nor administered cathartics; but in cases of evident flatulent annoyance, relief was speedily obtained by warm enemas. In nearly all cases, however, as the fever declined and the nervous forces rallied from their prostrate condition, the returned natural peristaltic action of the intestines afforded satisfactory relief. In many cases, however, this was facilitated by the alternate administration of Merc. sol. and Nux vom.

Ordinary emesis was usually controlled by Ipecac., China, and Tart. emet.; but whenever the ejecta degenerated into muco-sanious, flocculent and coffee-grounds vomits, I at once placed the patient under Sulphuric acid and Arsenicum, with brandy stimulants and alcoholic abdominal fomentations; and my success in these cases is abundant proof of the judicious selection of my remedies. I regarded the *Sulphuric acid* as my sheet-anchor in the hæmorrhagic and flocculent black-vomit, in which it scarcely ever failed to produce good results; nor was it of less value than other agents in coffee-grounds ejecta as well.

Complicated with and following upon many cases of the continued, nervous, typhoid and hæmorrhagic types of the disease, were hard swellings of the parotid and salivary glands, not infrequently developing into abscesses. These conditions were generally relieved by Bellad., Calc. carb., Hepar sulph., Merc. viv. and Nitric acid.

Of all the remedies suggested for giving tone to the system after the debilitating waste incident to the fever, I have found none so beneficial as Præcip. Carb. Ferrum.

The etiology of this terrible scourge is a subject requiring too extended a review for the present article; yet it may not be inappropriate to scan some facts touching upon this branch of our subject. Whilst the poison is undoubtedly often imported, it is equally certain that it has been known to show itself in sporadic cases at our very doors, and under circumstances which preclude any possibility of doubt as to its local source. In defense of this statement I need only to refer to the case of Robert Feagan, an attaché of the Confederate naval service during the late war, and James Zittrouer, another young man whose case was well known at the time. So could I recall other well-marked cases if I should apply myself to this task. That the morbid force which produces yellow fever can be developed here if all the combination of elements necessary to its production happen to come together in one and the same location and season, I firmly believe. That it is a disease having a singular affinity for *cities*, cannot be gainsaid; that it may make its appearance on shipboard at sea in tropical regions, is a matter of experience; that it may raise its hydra-head on vessels in harbor, is beyond all doubt. And so also may we have malignant pestilential typhus, to which so many closely allied cases showed themselves in this city in 1876; and the extensive typhoid and relapsing symptomatology manifested by such an enormous proportion of the cases, lends additional strength to the opinion which I herein express, viz.:— That the odors and gases emanating from our sewers, privies, dry-wells; and surrounding filthy bogs and stagnations, which were swashed by the heavy rains of June, and left to be acted upon, fermented, and developed into new combina-

tions of special, destructive and putrescent malignity by the hot suns of July and August, were the real infectious poisons that spread pestilence and havoc through Savannah in 1876.

It is the opposite of wisdom to bolster our sins of omission and heedlessness by unsustained assertions of direct morbid importation, when the ghastly facts of our own internal filthiness stare us in the face. Let us have the truth, be the censure on whom it may.

Imagine a man placing a large slop-bucket in his room and emptying therein the contents of his wash-bowls and excretory vessels, nor ever removing or disinfecting them, but letting them stay there and ferment and give out their pestilential gases until himself and his family are driven out of their abode by the noisome exhalations! Then look at Savannah in 1876, sleeping over her slop-bucket! the filth of the city, swashed by the heavy June rains unto the unclean, undrained and stagnant flats to the east and west, where the hot summer suns fermented and diffused its noxious gases into the surrounding atmosphere; and the unflushed sewers, dry-wells and stinking privy-vaults exhaling under our nostrils the typhoidal poisons of their excrementitious contents! Is it any wonder that the pestilence came creeping back from the east and the west to the regions from whence its organic elements coursed their foetid flow!

The transition from the sporadic, or *local foci*, to the epidemic type of disease can be best illustrated by a circumstance familiar to us all. It is well known that when the wounded of an army are crowded together into hospitals, there will be developed occasional cases of erysipelas; and if these be not speedily removed and effective hygienic measures promptly made use of, there will soon exist in that hospital *epidemic erysipelas*. What gives this new infectious or contagious force to the disease? Just so in particular localities the essential productive elements of yellow fever get into approximation under thermometrical conditions favorable to their ignition and development of new combinations and disease-producing forces.

It is unnecessary for me to enter into any dissertation on the differences between malarial diseases and those originating from the gases and poisonous exhalations of sewers, stagnations, and other filthy depositories of decomposing carnivorous elements, organic debris, and human excretions. Indeed, the more deadly nature of the latter are scarcely yet realized. Too much stress has been laid upon the former, and too little upon the latter.

Whilst yellow fever is chiefly confined to cities and commercial water-lines, so are these water-lines the drains, and these commercial centres the hot-beds of organic decomposition and putridity; and it is an equally certain fact that the disease generally makes its first appearance in noxious and squalid localities. Why then should we turn to the cobblestones and ballast to shield us from the censure and punishment our neglect of nature's laws of cleanliness has caused us to suffer! Who will venture to assert that those poisonous gases and evaporations which breed typhoid and diphtheritic disorders even in the wintry seasons, may not take on new combinations with other elements, and greater pestilential activity, under the more favorable temperature of the August dog-days!

REVIEW.

Dr. O. A. White, of New York, in his report on the late epidemic, delivered before the New York Academy of Medicine, says in substance:

"The efflorescence about the head, neck, face, chest, and back, though searched for, was not apparent during the epidemic.

"No case presented the noted *orange-hue of the skin*.

"When black-vomit occurred, it was *invariably after the subsidence of the fever, and during the calm*—"—

—in all of which the doctor is grievously mistaken, and his observations must have been much more circumscribed than his sweeping declarations would lead one to suppose. Equally incorrect were his additional assertions that "black-vomit was rarely seen, and those exhibiting it recovered with the rest; that there was no evidence of the communi-

cation of the disease from one person to the other by direct contact, or transmission by the exhalations, or secretions, or clothing; and that it did not run through families." The very opposite was the case; and the doctor's statements must have been developed out of his own theoretical imagination. If those who had black-vomit "recovered with the rest," it is most singular how about 1600 persons died in four months, of whom nearly 1200 can be safely attributed to yellow fever.

SUMMARY.

Number of cases of yellow fever treated by me, between 900 and 1000.	
Number of deaths in cases to which I was called before fatal symptoms (black-vomit, and suppression of urine) had set in,	17
Number of deaths in cases to which I was called <i>after</i> fatal symptoms had set in,	15
Number of black-vomit cases recovered,	45

Of the thirty-two deaths, eight were cases of relapse, and twenty-four were original first attack.

Of the seventeen cases seen by me before fatal symptoms had set in, five were "death-struck" from the inception of the disease.

I treated over 100 cases of the hæmorrhagic type without a single death.

PROGNOSIS.

When the disease attacks the brain especially, as in the typhus-cerebral type, wild delirium supervenes. When it attacks more directly the abdominal viscera, the brain remains clear. These distinctions are of great value in directing the treatment.

The pulse increasing in an adult to 140 or over, is of serious import (see case 2) even in the first stages of the fever; and when remaining rapid after the decline of the temperature indicates great exhaustion. When in the second stage it lowers and becomes soft and compressible, whilst the general phenomena of the disease gradually subside, the prog-

nosis is favorable ; but when it becomes harder and thumping to the touch, or threadlike, feeble, and irregular, the case is taking on graver conditions. When the symptoms continue in all their force from the beginning, not yielding to any measures for relief, death will occur in about 48 to 72 hours.

Inextinguishable thirst is a bad sign.

Dyspnoea, or panting respiration, from the intensity of the fever in its earlier stages, is not usually of serious import ; but continuing after the subsidence of the febrile onset, or appearing in the second or third stages, especially if associated with pinched nose, intense thirst and oppression and burning in the pit of the stomach, and sighing and moaning, points to a speedily fatal result, particularly if accompanied by throbbing of the cœliac trunk.

The vomiting of the contents of the stomach in the early stages of the fever is unimportant, often relieving the feeling of oppression in the epigastrium—but when persistent after the first twelve hours and becoming clear and watery, or of a darker hue, and containing particles like bees-wings or the washings or skin of parched coffee, points directly to the “coffee-grounds” vomito, and is of alarming nature.

Profuse sweatings during the febrile access and early remissions are of good omen ; but extending into the second or third stages are colliquative in character and indicate great weakness.

Hæmorrhages of red blood, whether nasal, buccal, cystic, or uterine, in the onset of the disease, have no graver meaning than to indicate a hæmorrhagic tendency ; but are intensely alarming when coming on after the primary access subsides, and especially if they exhibit a dark or blackish hue and form black incrustations on the gums, lips, etc.

Purple lips in the beginning of an attack presage fatality.

Dryness of the skin, and a red, parched, glazed tongue often denotes a more continued or typhoidal type of the disease.

Hiccough from flatulence, in the beginning of an attack, is unimportant ; but appearing in the second stage and continuing in the third stage, indicates approaching dissolution.

Dark-looking bilious dejections, particularly in the early

period of the fever, are not alarming; but they may degenerate into hæmorrhagic discharges looking black and often giving warning of approaching vomito.

Retention of urine is not alarming; *suppression* is fatal.

Albuminuria is frequently met with; but it is so often seen in Dengue and other fevers that it cannot be considered characteristic of yellow fever.

Sudden storms, alarm, fright, gloomy conversations, the hearing of the illness and death of others, and similar mal-influences always act banefully. Epidemics become more fatal in ratio to the number of cases as the fall season appears—September and October being the worst months in this respect.

The following prognostic indications are so well given by Dr. Belot that I transcribe them as written:

“When *Cephalalgia* is violent and continues during the second stage, without remission of the other symptoms, the case will be grave. When it disappears suddenly, but the stomach is painful and the *coeliac* throbbing can be observed, the remission is deceptive.

“When in the beginning there is vomiting, epigastric pain, with throbbing of the *coeliac* trunk, death is certain if jaundice makes its appearance.

“When, with jaundice, the urine is of the color of decoction of rhubarb, and when there is little or no pain in the stomach, the case will recover.

“Remissions occurring suddenly, with small and irregular pulse, cephalalgia, and dryness of the skin, indicate great danger, which will be still greater if jaundice appears before the third day, with epigastric pain, throbbing of the *coeliac* trunk and constipation.

“Clear, watery vomit, with gray or brown flakes leaving a burning sensation in the throat, is the precursor of the veritable vomito.

“If the intermission manifesting itself in the invasion is allowed to pass to the second access, the patient will eject black vomit on the third day and die in convulsions. These conditions occur mostly in September and October.

Sudden pains occurring towards the conclusion of the disease, even when the patient is believed to be convalescing, are of very bad augury, and announce spontaneous gangrene which carries off the patient in less than forty-eight hours."

HYGIENIC PRECAUTIONS.

No more than one case should be allowed in a sick room. The aggregation of cases intensifies the disease. Cases of a mild character removed to rooms where severer ones exist, or where a malignant character of the poison exists from previous severer cases or dead bodies of such cases having occupied the room, quickly exhibit more violent symptoms.

Pure air and isolation of each case are great factors in securing favorable results.

The removal of a case from one house or locality to another, especially during the second or third stages, particularly through the night air or in stormy weather, will almost certainly cause death.

No draughts should be allowed to blow on the patient, but fresh air and ventilation is absolutely essential.

Dead bodies augment the intensity of the poison.

The more the focus of infection is confined, as in the hold of a vessel, the more intense and malignant will be the miasma.

Wood is one of the worst absorbents of the poison, especially in vessels.

("Persons having been sick with the fever may get well and go elsewhere without carrying the poison with them from the focus of infection to those with whom they come in contact—but let these same others go into the infected place or focus and they will take the fever."—Belot).

The poison is denser at night in the air of an infected city than in the day time; and persons exposed to the night air are more liable to attack. This indisputable fact strengthens my own view that the yellow fever poison finds its origin in conditions more of a septic than vital nature. It is very well known that erysipelas may under certain conditions become epidemic, and under certain isolatory and other agencies lose its epidemic influences. Just so we see yellow

fever develop epidemic characteristics at certain seasons and in certain conditions and localities and surrender these characteristics at other seasons and under other conditions. I confess my inability to reconcile these peculiarities with the theory that the poison is a *living germ*—a theory upon which is based an enormous array of regulations, experimentalisms, and absurdities and abominations in treatment, involving losses of life and commerce to an enormous extent, and giving nothing in return but a microscopic theory that *if it isn't a germ, IT OUGHT TO BE!*

In this method of dealing with a supposititious cause, true hygiene is lost sight of, and that genuine sanitation which would prevent the development of such poisons sits waiting in the background (like Rachel weeping for her children) because her pretended votaries have eyes but will not see!

No upholstery should be allowed in railway cars running into and out of infected districts. And thorough scouring of the floors, benches, windows, and inside walls of each car should be insisted upon immediately after every trip.

NURSING REGULATIONS.

As soon as the person is taken with the fever, whether it is hot and the skin dry, and whether it is attended with chilly shudderings, he should go immediately to bed and stay there until his recovery. At once order a hot mustard foot-bath, first disrobing, with the exception of one shirt or gown, and covering with a sheet (and blanket if he is chilly). In some forms of the fever a hot foot-bath every four or five hours until the fever cools is sufficient. In cases of intense high fever, especially with a hot, dry skin, the bath may be used every two or three hours, and in convulsions continuously until the convulsions cease. After the first stage of the fever the bath is rarely of use, and has a tendency to weaken the patient.

If the thirst is intense, a little pounded ice put frequently on the tongue gives much relief. No drink is more generally acceptable at this stage than the common bottled lemon soda water of the saloons.

If the stomach is irritable, a mustard plaster over the pit is often of benefit; and when constipation and flatulence co-exist, an enema of warm water, emptying the lower bowels, will frequently relieve the distress.

Warm drinks generally promote sweating in the febrile stage, and help to eliminate the poison through the skin.

When, in the second and third stages, the patient complains of intense, burning thirst, with pain in the stomach, pounded ice with a little brandy on it, administered in teaspoonful doses every few minutes, often gives magical results. If to this, or in alternation with it, a little sulphuric acid diluted in water (10 drops to a tumblerful, so as to taste a little acid,) is also given, not infrequently the white watery or dark vomits, and often the genuine *vomito* itself, will be checked and the patient saved. I have seen many cases of the coffee-grounds vomit recover by these means.

Whatever desire the patient may have to be purged, it should never be done with the pregnant female, as it will most assuredly bring on abortion.

No visitors should be allowed to the sick. Conversation should be avoided, as it makes the patient nervous; when unavoidable, it should be cheering, and no mention should be made of the sickness or death of others. The sick bed of a yellow fever case is no place for a prayer meeting. Gloomy forebodings exercise a most baneful influence.

No draughts should be allowed to blow on the sick, but the fresh air should always be permitted to ventilate the room. Immediately after the first profuse sweatings subside I have often directed a change of garment and bedding with good results. The intense fever smell arising from the sweat is thereby taken from the sickroom.

On no account allow the patient to get out of bed—not even to use a chamber; a violation of this rule will often induce vomiting and collapse.

When the condition of the stomach permits, a light beef broth may be given every two or three hours. Bodily frictions with oil are of service when this organ still remains irritable.

When clammy and cold sweatings supervene and great exhaustion is apparent, sponging the body with alcohol and warm water, or brandy and water, is of great service. In intense debility it is best to use the liquor without dilution.

Ice water may be given frequently, in small quantities, to relieve the burning thirst.

Warm bricks or bottles of hot water to the feet are of great value in cold conditions.

Baths or spongings of cold water are very dangerous, as they check the cutaneous eliminations and induce internal congestions.

I am convinced that when one is attacked with the cerebral type, with wild delirium, and intense burning fever, the case may be benefited by being put bodily into a bath-tub full of warm water and kept there, for even hours at a time, until the delirium subsides—the water being kept steadily at a temperature above that of the body. Such a condition is desperate and warrants so heroic a bath.

The nurse should not take charge of the treatment of the case beyond what I have indicated.

MEDICAL TREATMENT.

The importance of correct treatment in the beginning of the attack cannot be over-estimated, as what is accomplished in the first twelve to twenty-four hours often determines the life or death of the patient. The greater fatality attending hospital cases is due not only to the "aggregation of cases and intensification of the poison," but to the fact that few cases are brought to the hospital until they have reached the second or third stages of the disease. It may be safely stated that the death ratio will be three times as great in hospital as in private practice under similar treatment.

If the case is seen in its early stages when the fever is high and the pulse bounding, whether the skin is dry or moist, or whether chilly shudderings or intense heat exists, put 5 or 6 drops of Tincture Aconite in one tumblerful of water (about 6 oz.), and 5 or 6 drops of Tinct. Belladonna in a second tumblerful of water, and give these solutions alternately every half hour, in dessert or tablespoonful doses,

until the first febrile onset subsides. In those cases where little or no secondary symptoms follow such subsidence little more medicine will be needed, beyond some Nux Vomica and Cinchona tinctures, prepared similarly, and given for a few days to tone up the stomach.

If the temperature remains high after the first twenty-four hours, and intense headache continues, with an irritable stomach coming on, Nux Vomica and Arsenic, or Belladonna and Arsenic, are the remedies—Nux alternately with the Arsenic when the gastric disturbance predominates, and Belladonna alternately with the Arsenic when the cephalalgia is most intense. The constant wakefulness at times present in this stage is often wonderfully subdued by a few swallows of well-made coffee.

My own experience accords with that of Belot, who says, "that if there are *chills* in the early stages of the fever and on its decline good remissions occur, Quinine is useful; but if there are *no chills* in the early stages, and the fever continues, with hot and dry skin, no propitious moment can be found for its use."

In August and the early part of September I used Quinine with good results in cases of the above character where marked remissions of the fever followed its primary onset; but later in the season, particularly in the October and November cases, the disease assumed the more marked typhoidal symptoms and I rarely found Quinine of any use. On the contrary I am sure it promoted cerebral and nephritic congestions.

During the entire early rise and remission of the fever the hot mustard foot-baths should be employed, as directed in the chapter on nursing; but they are of little service beyond this stage, and positively injurious at later periods because of their debilitating influence.

When vomiting in the primary stage is prolonged and troublesome, it may often be speedily checked with small doses of Ipecac. Put 3 or 4 drops of the tincture to 4 ounces of water and give a teaspoonful of this solution every 15 to 30 minutes until relief is afforded. Pounded and cracked ice is

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